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WEEKLY STATION REPORTS

OF THE DIVISION OF

DRY LAND AGRICULTURE

BUREAU OF PLANT INDUSTRY

U. S. DEPARTMENT OF AGRICULTURE

GPO

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REPORT FOR THE MONTH OF JANUARY, 1942

HAVRE:

The average daily maximum temperature was 8.1° above normal. The first week was rather cold, getting as low as -24°. There were 23 days in which the temperature was above freezing. The snow has practically all disappeared, leaving all fall-sown cereals bare. The stubble fields have no snow left.

Overhauling the tractor, cars, and machinery has been the principal activity. Foundation seed has been hand-picked, and considerable time was spent on records and reports.

The second period of the R. O. P. tests was completed and weights taken on the 28th. The yearling heifers did not do very well, nor did the heifer calves do as well as last year. It is quite evident that the formula of maintenance plus 4 pounds of alfalfa for the yearlings and maintenance plus 2 pounds for the calves restricts them too much. For the third period the yearlings will get maintenance plus 6½ pounds and the calves maintenance plus 3 pounds of alfalfa hay. The severe weather the last week of December and the first week in January while on a restricted ration undoubtedly was reflected in the poor gains. The cow herd is coming along in satisfactory shape.

Maximum temperature, 47°; minimum, -24°; precipitation, 0.04 inch; snowfall, 0.3 inch.

JUDITH BASIN:

January with a mean of 27° was 7° warmer than the station normal, although the first ten days of the month were cold. Precipitation totaled 0.46 inch, which is slightly below normal. Most of the snow drifts from the late December storm melted and went into the ground, there was practically no run-off. There were a few days with some soil blowing.

The 1st-period results in the winter feeding experiment showed that Lot B receiving crested wheatgrass hay (cut before bloom) with 0.9 pound of soybean meal pellets (protein supplement) made the best average daily gain of 1.57 pounds; Lot D receiving crested wheatgrass hay (cut after bloom) with 3 pounds of cottonseed-beet pulp-molasses pellets made the second best average daily gain of 1.28 pounds per steer; Lot A receiving native hay with the same type and amount of supplement as Lot B was third with gains of 1.04 pounds. Lot C which received crested wheatgrass hay (cut after bloom), the same type as used in Lot D, with the same kind and amount of supplement as Lots A and B made the lowest gain, 0.86 pound per steer per day. With good weather conditions during January, similar gains are expected during the second period which ends February 4th.

Maximum temperature, 59°; minimum, -15°; precipitation, 0.46 inch.

HUNTLEY:

The cold period beginning in the last week of December extended through the first week of January with sub-zero temperatures recorded every day. A snow cover of from 2 to 6 inches acted as an insulator between air and soil, and soil temperatures at a depth of 2 inches remained constant at 31° according to the soil thermograph.

A Chinook wind started to blow on January 7, and temperatures rose rapidly. By the 10th all snow except that in shaded places had melted and the ground was dry. Rain on January 27th and 28th changed to snow on the 29th when 7 inches was received. At the close of the month there remained a uniform snow cover 2 inches in depth.

Wind velocities were rather high in the month and snow drifted badly in places causing suspension of rural school bus and other traffic on secondary roads for a few days. Some difficulty was experienced in getting feed to livestock on ranges and in feed lots for a short time.

The lamb feeding experiment was completed January 26th, and three double-deck carloads of fat lambs were shipped on the 27th.

Maximum temperature, 53°; minimum, -32°; precipitation, 0.29 inch. 32-year average, 0.68 inch.

SHERIDAN:

Cold weather prevailed over the first 10 days of January, but the remainder of the month was mild. The snow on the ground on the 1st gradually melted during the last 20 days, until at the last there were only the remains of shallow drifts on north slopes and in the shade. There was no noticeable run-off on cultivated land, but the most of the clumps of shrubbery around the buildings were fairly well irrigated with run-off from above the buildings. No field work of any kind was possible. Precipitation was about half the average for January, and wind movement was low, especially during the last half of the month.

Maximum temperature, 53° on the 23rd and 27th; minimum, -20° on the 1st; precipitation, 0.28 inch

DICKINSON:

After real winter the first 10 days, the weather became mild and pleasant for the rest of the month. Mean temperature for the first period was -8.7°, with a minimum of -33° on the 7th. Mean temperature for the full month was 19°. This was 8° above normal, 7° above January 1941 and 26° above January 1937, the coldest in recent years. Maximum temperatures were in the 40's and 50's on most days during the last three weeks. The ground thawed some nearly every day, and the surface was bare of snow most of the time.

Some time was spent trimming trees in the shelter-belt. Trashy manure was spread in plantings of small evergreens to avoid possibility of soil blowing.

Maximum temperature, 54°; minimum, -33°; precipitation, 0.17 inch.

MANDAN:

Arboriculture: Cultivation and Width of Shelterbelts

Cultivation to prevent excessive weed or sod growth is one of the recommended practices for securing maximum growth, survival, and the maintenance of healthy growing conditions in farm shelterbelt trees on the northern Great Plains. Unfortunately this recommendation is followed only by approximately 10 percent of farmers having plantings 25 years of age; 19 percent having plantings 20 years of age; 26 percent having plantings 15 years of age; 43 percent having plantings 10 years of age; and 50 percent having plantings 5 years of age. Some of the older plantings that receive no cultivation are not necessarily weedy or soddy, as a few develop sufficient overhead shade to prevent excessive weed or sod growth. Such plantings do not require cultivation, and the uncultivated soil surface with its leaf-mulch accumulation is better for absorbing moisture than if it were cultivated. However, the differences in growth and vigor of trees grown under conditions reasonably free of weeds with those grown in direct competition with weeds and sod are quite noticeable in the field. Some of these differences based on data collected in 1941 from 59 farm shelterbelts established in Montana in 1927 are shown in the following table. Data are shown for green ash only, as this species usually maintains a higher survival than other interior species and ordinarily more ash rows are planted in an individual belt than are rows of any other one species. The data represent the differences found at an age of 15 years. The standard error has been computed for each set of data.

Cultivation method	Number plantings	Survival	Height	Diameter	Crown spread	Uninjured1/
		percent	feet	inches	feet	percent
Clean	23	85.4±4.4	12.2±0.7	2.0±0.7	7.6±0.5	84.3±4.6
Weedy	18	65.5±8.2	8.8±0.7	1.6±0.01	5.9±0.5	66.4±7.8
Soddy	18	56.8±7.5	6.6±0.7	1.7±0.01	4.3±0.4	48.9±6.8

1/ Represents the percentage free of winter or other killing back.

During recent years observations have tended to show that higher survivals of certain species are found in narrow plantings (4 to 6 rows) than in wider plantings. There is good evidence to show that this can be attributed to the collection within the planting of drifted snow. Drifted snow has proved to be a vital factor in providing supplemental moisture, particularly during drought periods. In wide belts (9 or more rows) it is seldom that snow drifts through in appreciable depths to inside rows (row 8 and upward, leeward side), whereas in narrower belts deep drifts may cover the full width of the belts. Ash species are usually planted toward the leeward side of the shelterbelts, where in wide belts they benefit little

from deep drifts of snow. A comparison of the growth of this species in 4, 5, and 6-row belts with the growth in belts of 7 to 12 rows is shown in the following table. These data were collected in 1941 and are based on 53 plantings at 15 years of age which were set out in Montana in 1927. The standard error has been computed for each set of data.

Number of rows	Number plantings	Survival	Height	Diameter	Crown Spread	Uninjured 1/
		percent	feet	inches	feet	percent
4 to 6	24	83.1±3.9	11.5±0.6	1.9±0.06	7.5±0.5	82.3±4.4
7 to 12	29	63.8±6.7	8.5±0.6	1.7±0.06	5.4±0.4	63.4±5.7

1/ Represents the percentage of trees free of winter or other killing back.

Weather: The weather for the month of January was characterized by extreme cold the first 10 days, with minimum temperatures ranging from -17° to -27°. The remainder of the month was comparatively mild reaching a maximum of 54° of the 23rd and 25th, with minimum ranging from 13° to 26°.

The precipitation, in the form of snowfall, has been very slight this winter, and a small amount of soil blowing has taken place on the station. The ground is completely bare of snow at this writing.

The unseasonably warm weather during the month resulted in growth activity of trees. Buds have swollen on many species and are at the breaking point on species of Populus. Reports from the City of Mandan indicate that leaves have actually appeared on some trees.

Maximum temperature, 54°; minimum, -27°; precipitation, Trace.

BELLE FOURCHE:

Exceptionally cold weather prevailed the first week in January, but the following three weeks were unusually mild, and the mean temperature was 8° above the 34-year normal for the month. Temperatures of -16° or colder were recorded every day from January 1 to 6 inclusive. Strong Chinook winds on January 9, 10, and 11 caused the weather to moderate, and the snow melted rapidly. Precipitation in January was negligible, the only measurable amount being an 0.08 inch rain on January 25. Strong winds were of frequent occurrence, particularly during the first half of the month, but there was no drifting of soil.

The limited amount of snow retained on cultivated fields did not provide sufficient moisture to be of much benefit, and the surface soil is still very dry. The tips of winter wheat leaves were killed by the subzero weather early in the month, but otherwise winter wheat and winter rye remain green and are in excellent condition.

Maximum temperature, 58°; minimum, -22°; precipitation, 0.08 inch.

ARCHER:

The weather was unusually cold during the first ten days of January but mild during the remainder of the month. The mean temperature approached the long-time average. Most of the precipitation came during the first ten days of the month and was in the form of snow. As but slight wind occurred during this period most of the winter cereals were covered with snow during the coldest weather, however, they suffered considerably, especially those seeded with the surface drill in corn rows. During the same period the rabbits caused considerable damage to the surface-drilled wheat. Winter cereals seeded with the furrow drill are in better condition, and all plants revived during the mild temperature period.

Wind velocity during January was lower than the average and but little soil blowing occurred, however, dust was raised several times from a burned stubble field.

Livestock in this section are in a thrifty condition, and there are good supplies of range grasses and stored feeds.

Maximum temperature, 55°; minimum, -25°; precipitation, 0.57 inch.

NORTH PLATTE:

The sub-zero weather which began the third week in December continued through the first ten days of January. Temperatures of zero or below zero were recorded on eight days, and there were no maximum temperatures above freezing recorded the first eleven days of the month. The weather during the remainder of the month was mild. The wheat greened up and apparently was not injured by the cold weather. The precipitation for the month was 0.14 inch below normal, and nearly all came in form of a snow the last two days.

The annual crop reports were completed during the month.

Maximum temperature, 58°; minimum, -17°; precipitation, 0.25 inch.

AKRON:

The cold weather reported at the end of last month carried on to reach a low of -25° the night of January 4. Weather then warmed to the end of the month when it snowed and then turned colder but with no sub-zero temperatures. This last storm was very disagreeable to the fattening steers. The snow settled after the first of the month, but the recent storm re-built the cover to 6 to 7 inches. The snow at the end of last month, and the recent one has occasioned frequent bedding of the cattle, adding considerably to the work incident to that project. Other work was the grading of pure seed supplies and preparing bulletin material and the annual reports.

Maximum temperature, 46°; minimum, -25°; precipitation, 0.61 inch.

COLBY:

January started out very cold and snowy with about 17 inches of snow covering the ground and most of the roads blocked with snow, but the last three weeks were comparatively warm and pleasant. The precipitation was .26 inch, all of which fell in the form of light snows preceded by mist.

The mean temperature was 23° which is 4° below the station average. The temperature remained below freezing constantly the first 9 days, and the minimum dropped to zero every night but one during that period. The last 22 days the minimum temperatures ranged between 10° and 32°.

The wind velocity was appreciably below the station average for the month. There was only one windy day, the 10th, which drifted the snow considerably several days after it had fallen. The snow that fell on the 3rd and 29th was so light and fluffy that it drifted as it fell although only a moderate wind blew. There were no bad storms.

The snow settled and melted gradually until it was practically all gone by the 26th. Patches still remained, however, when an inch more fell on the 29th. This was practically all gone by the end of the month. The ground was not frozen under the heavy cover of snow the first part of the month. As the snow melted, however, the ground froze, and when the temperature dropped to 10° on the 16th the ground was frozen to a depth of about 6 inches. By the 26th the frost was out of the ground. From then to the end of the month the surface froze every night, but thawed out during the day.

Wheat remained green under the snow. Some of it froze down some after the snow melted. Most of the fields were pastured the last half of the month. Roads were bad in most places the whole month, blocked at first then rutted or muddy.

Maximum temperature, 59°; minimum, -22°; precipitation, 0.26 inch; snowfall, 4 inches.

HAYS:

The first part of the month was cold. Minimum temperatures dropped to below zero eight times during the first ten days. After the 10th the lowest minimum temperature was 20°.

At the beginning of the month the ground was covered with about 4 inches of snow. This disappeared rather rapidly after the 10th and was practically all gone by the 15th. The weather was mild after the middle of the month. There were 16 clear days during the month.

The top soil in this vicinity at present is in excellent condition to resist wind erosion. There is no apparent danger now, but a light drifting snow or some light showers with daily freezing and thawing of the surface soil could rapidly change conditions.

There is no ice in the ground. Some tillage is being done, but the top soil is not in good condition for work. It seems dry enough that it should work, but turns heavy, is stiff and gummy, and will not crumble.

Winter wheat has made considerable growth; the fields are generally green and are furnishing some good pasture.

Alfalfa seeded on the project last spring has started new growth and weeds are emerging rapidly in all protected or sheltered places. It seems a little early for so much plant life.

Maximum temperature, 63°; minimum, -15°; precipitation, 0.12 inch; including 2.0 inches of snow.

GARDEN CITY:

The month started off with seven consecutive days with minimum temperatures below zero. The temperature dropped to -20° on the 4th, which is second only to the -21° on January 10, 1918. After this cold spell the weather warmed up considerably and the mean temperature for the month was average. Although the wind velocity was below average, there were two days which were dusty, due mainly to local fields blowing. Precipitation for the month amounted to 0.05 inch, which is well below the average of 0.29 inch. Last January, 1.31 inches were received.

The wheat survived the cold spell without apparent injury and is in good condition.

Alleys in the annex were listed and a few plots were cultivated to control soil blowing.

Maximum temperature, 65°; minimum, -20°; precipitation, 0.05 inch.

DALHART:

Weather for the first half of the month was cold, but the last of the month was characterized by mild, open winter weather. Field work was impossible the first part of the month. After the weather moderated, threshing was completed and fall tillage work was done. Stover weights also taken during the month. These fodder weights were really excellent, air dry weights. They were fully comparable with those of other seasons, and they were much better than anticipated following the two weeks wet weather at harvest time. All grain has been recleaned. It is just now possible to start compiling the annual reports. This is fully one month late.

Wheat in the territory, where wheat can be grown, has good top growth and only a fair green color. Stock is still grazing on wheat pasture. Grasshoppers thinned the borders of plots to such an extent on the station that it is questionable now if parts of the plots can be saved for yields.

Fodder is of both poor and good quality. Where harvested before the October rainy weather the bundles are discolored and of low quality. Where harvest was possible immediately after the rains the quality is good.

Maximum temperature for the month was 70°; minimum, -1°; precipitation, trace. The mean temperature was exactly normal, 33°.

BIG SPRING:

Weather conditions during the month of January were rather variable. Continuous cold weather prevailed during the first week or ten days when the minimum daily temperature ranged from 13° to 20°. A light snow was received during this time. Other than this no moisture was received during the month. The remainder of the month temperatures were warm and wind velocities were low.

In spite of the lack of January rains, the surface soil still has sufficient moisture for plowing. However, a few high winds will dry it out to such an extent that rain will be needed before plowing can continue. There is still some cotton in this section to be pulled and considerable feed to be stacked before much preparation of land can be accomplished.

Station work consisted of widening terraces and plowing the cooperative field. Peanut plots and considerable milo for the feeding experiments were threshed. Other work consisted of stacking Hegari from an increase field and threshing bagged heads for seed.

Maximum temperature, 78°; minimum, 13°; precipitation, 0.1 inch.

WOODWARD:

Precipitation in January was only 0.26 inch, most of which occurred on the 29th. Subnormal temperatures with maximum readings below freezing prevailed until the 10th, followed by relatively mild weather thereafter, the mean of 34° for the month being approximately normal. A minimum of -11° on the morning of the 5th was the third coldest temperature recorded since the establishment of the station in 1914. Ice on the main reservoir attained an average thickness of about 6.5 inches by the 10th but disappeared rapidly with milder temperatures, the lake being entirely free by the 20th.

Injury to small grains from low temperatures appears to be negligible, except in winter oats and a variety of barley where slight killing evidently occurred. Vetch and Austrian field peas also were probably damaged to some extent. Wheat, rye, oats, and barley sown January 2 germinated but have not yet emerged. Wind erosion was not a serious problem during the month, cultivation for control being confined to certain fallow, row-crop stubble, and late-sown plots. Grading east and west roadways in Field B, top dressing several plots with manure, and destroying gophers and rabbits comprised other miscellaneous field activities.

Tree and shrub materials were dug and sorted for cooperative experimental planting shipments. Replacements have been made in the observational blocks and various species added to dry-land shrub test blocks. Additional work included taking growth measurements, making hardwood and grape cuttings, and extending the east contours to the north fence line. A number of tomato crosses were also made.

In the grass breeding project, individual plants of hybrid, self-fed, or open-pollinated populations of buffalo, blue grama, side oats grama, and sand bluestem are being started in the greenhouse for the 1942 nurseries. Steers in the 20 native grass pastures at the Experimental Range Unit gained 0.50 pound per head per day during January. Since the start of the trial on December 9, the average daily gain has been 0.61 pound per head.

Other general station work included repairing slide areas on the north face of the dam, tarring expansion joints on the concrete spillway lip, and levelling the earthen dike at the outlet.

Maximum temperature, 72°; minimum, -11°; precipitation, 0.26 inch; snowfall, 3.2 inches. Reservoir 18.8 feet, held 0.5 feet below full stage to permit work at spillway.

LAWTON:

The only winter weather of much consequence to date occurred during the first ten days in January, when minimum temperatures ranged from 1° on the 4th to 15° on the 10th. The maxima ranged from 15 to 35 during this period. Open weather prevailed the remainder of the month with maximum temperatures of 70° to 75° on five dates.

The freezing weather during the first ten days of the month eliminated most of the winter grazing available to livestock. Most of the wheat is not large enough to furnish much grazing now, except in a few scattered instances. Foliage on oats and barley was frozen to the ground surface.

Winter barley does not show any freeze injury or reduction of stand. A good deal of the volunteer oats was killed. Stands were usually very thick, and where the fields were heavily grazed and packed by tramping of livestock as they grazed there still remains sufficient stand to produce a crop.

Farmers are busily engaged in preparing seedbeds for spring plantings of oats, and a few seedings are being made now. The principal seedings will be made between February 1 and 15 if the weather remains open.

Winterkilling in 18 varieties of fall sown oats ranges from 0 to 100 percent.